

# History of some recently described *Charaxes* with the description and life history of *Charaxes vansoni* van Someren (Lepidoptera: Nymphalidae)

by S. F. HENNING \*

## Abstract

The evidence which led to van Someren (1975) establishing the three species *Charaxes phaeus* Hew., *Ch. brainei* van Son and *Ch. vansoni* van Som. is herein presented. The complete description, life history, habits, habitat and distribution is given of the latter species. A key is provided for the identification of these morphologically similar species.

## Introduction

Van Someren (1975) in an additional note at the end of his Revisional Notes of African *Charaxes*, Part X, raised to species status several taxa which were previously considered subspecies or forms. He was unable to include the evidence which led to the establishment of these species because the manuscript had already been submitted to the publishers. He requested, however, that on completion of the study the relevant evidence should be published, which is the object of the present paper.

## History

In 1972 an attempt was made to solve the intriguing problem of the uneven distribution of the female forms of the species then known as *Charaxes viola phaeus* Hew. in the Transvaal. Large series of both the southern and northern populations were examined and a number of specimens were bred. Enough evidence was obtained with regard to the differences in the morphology and the early stages to prove that the ♀ form *vansoni* was actually a species in its own right.

It was found that *phaeus* bred on *Acacia nigrescens* Oliv. and *vansoni* on *Peltophorum africanum* Sond. Neither species would accept the foodplant of the other. The larvae were morphologically quite distinct and the headshields were structurally different. Slight constant morphological differences were found in the males and the aedeagi were markedly different.

It was further concluded that *phaeus* also warranted full species status as, morphologically, it differs greatly from *Ch. viola* Butler and on examination of the genitalia and the life histories of both species this was confirmed. The larvae of *phaeus* and *viola* were quite distinct.

Morphologically *Ch. vansoni* is similar to *Ch. brainei* from South West Africa, but a comparison of the male genitalia showed marked differences. The aedagus of *vansoni* is distinct in having a large ventrally-projecting hook. In

\* 1 Lawrence Street, Florida Park, Florida 1710, South Africa.

## PLATE V

- Charaxes vansoni* van Someren ♂. 1. Upperside. 5. Underside.  
*Charaxes brainei* van Son ♂. 2. Upperside. 6. Underside.  
*Charaxes phaeus* Hewitson ♂. 3. Upperside. 7. Underside.  
*Charaxes fionae* Henning ♂ — paratype. 4. Upperside. 8. Underside.

*brainei* the large hook is present but it projects dorsally and the aedeagus is rather differently shaped. The differences between *vansoni* and *brainei* are great enough to consider them to be separate species. They possibly occur sympatrically in the Okavango Swamp area in Botswana but more collecting is required to determine their exact distribution.

The differences in morphology and genitalia between *brainei* and *viola* were such that it was decided that they, too, were best considered separate species.

Acting on the above information, van Someren (1975) raised *Charaxes phaeus*, *Ch. vansoni* and *Ch. brainei* to specific level. The above study also led to the discovery of *Charaxes fionae* Henning which is a species closely allied to *Ch. phaeus*.

#### KEY TO THE MALES

- |                                                                                                                                      |                    |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 1. Underside reddish-brown, upper tail on hindwing longer than lower one ...                                                         | <i>Ch. fionae</i>  |
| - Underside grey or pale brown, lower tail on hindwing longer than upper ...                                                         | 2                  |
| 2. Forewing upperside: subapical spots white or orange; aedeagus with irregular small teeth ...                                      | <i>Ch. phaeus</i>  |
| - Forewing upperside: subapical spots blue or green; aedeagus with large hook ...                                                    | 3                  |
| 3. Hindwing underside, pale coppery-brown with a silvery discal sheen only at costa, or absent; aedeagus with large ventral hook ... | <i>Ch. vansoni</i> |
| - Hindwing underside, grey with silvery discal sheen from costa to inner margin; aedeagus with large dorsal hook ...                 | <i>Ch. brainei</i> |

#### KEY TO THE FEMALES

- |                                                                                                         |                    |
|---------------------------------------------------------------------------------------------------------|--------------------|
| 1. Upperside with discal band ...                                                                       | 2                  |
| - Upperside without discal band ...                                                                     | 3                  |
| 2. Upperside hindwing discal bar broad, underside ground colour pale coppery-brown ...                  | <i>Ch. vansoni</i> |
| - Upperside hindwing discal bar narrow, underside ground colour grey with a slight violaceous tinge ... | <i>Ch. brainei</i> |
| 3. Underside reddish-brown ...                                                                          | <i>Ch. fionae</i>  |
| - Underside grey or pinkish-grey ...                                                                    | <i>Ch. phaeus</i>  |

#### KEY TO FINAL INSTAR LARVAE

- |                                                                                                                                                     |                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| 1. Body dull olive-green with fine creamy-yellow oblique lateral lines and two small creamy-yellow dorsal spots on each segment except the last ... | <i>Ch. phaeus</i> |
| - Body green without creamy-yellow oblique lines or dorsal spots ...                                                                                | 2                 |

#### PLATE VI

*Charaxes vansoni* van Someren ♀. 1. Upperside. 5. Underside.

*Charaxes brainei* van Son ♀. 2. Upperside. 6. Underside.

*Charaxes phaeus* Hewitson ♀. 3. Upperside. 7. Underside.

*Charaxes fionae* Henning ♀ — paratype. 4. Upperside. 8. Underside.

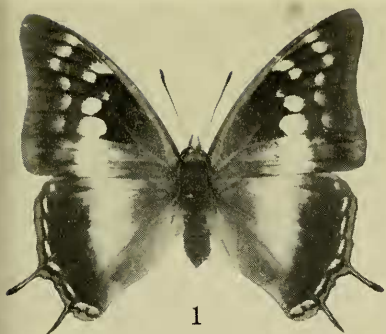
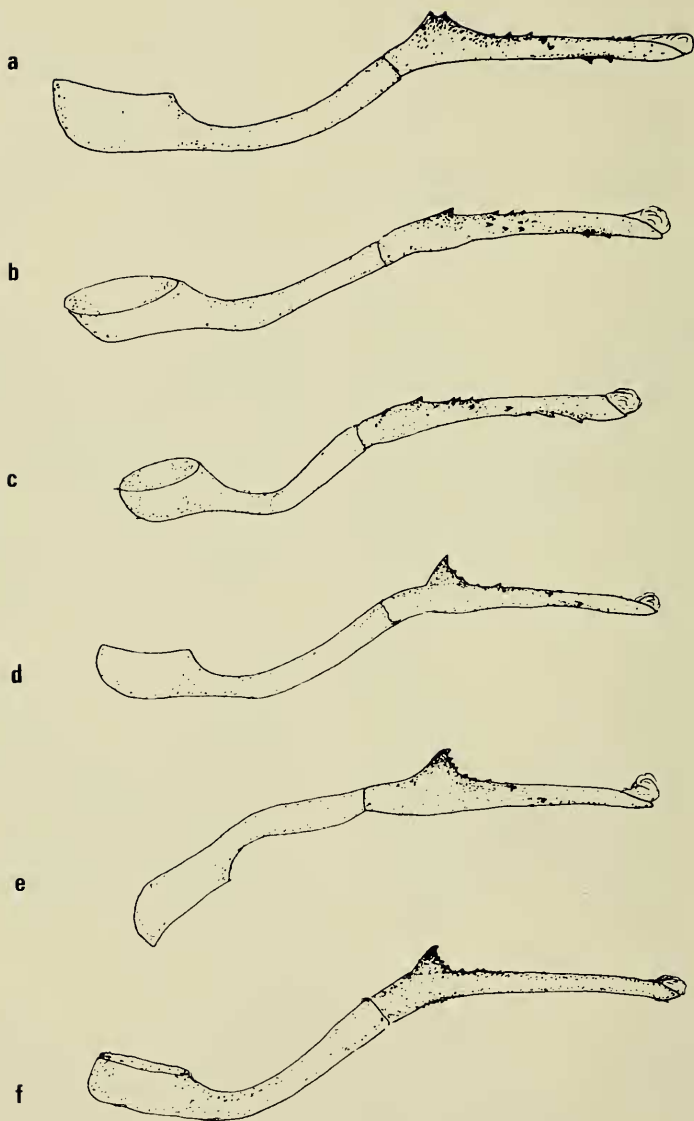


PLATE VII



Aedeagi of *Charaxes*:

a. *Charaxes viola kirki* Butler.

b. *Charaxes phaeus* Hewitson.

c. *Charaxes fionae* Henning.

d. *Charaxes brainei* van Son.

e. *Charaxes vansoni* van Someren.

f. *Charaxes howartha* Minig.

2. Intersegmental membrane yellowish between first six segments ... .. *Ch. vansoni*  
 – Intersegmental membrane not yellowish between first six segments ... .. 3  
 3. Body green with narrow somite bars ... .. *Ch. viola*  
     *diversiforma*  
 – Body green with broad somite bars ... .. *Ch. fionae*

*Charaxes vansoni* van Someren

*Charaxes viola phaeus* ♀ f. *vansoni*, van Someren & Jackson, 1957: 43.

*Charaxes viola phaeus* ♀ f. *vansoni*, van Someren & Jackson; van Someren, 1969: 137.

*Charaxes vansoni* van Someren, 1975: 107.

**DIAGNOSIS: Male, Upperside:** Velvety black with basal bluish lustre. Two blue subapical spots. Hindwing margin orange-red bordered with blue or greenish above upper tail, then olive to anal-angle. Postdiscal wavy green line faint. Lower tail longer and larger than upper. **Underside:** Forewing ground colour grey-brown. Black markings similar to those of *Ch. phaeus*. Hindwing ground colour coppery-brown with silvery satin sheen, extending from base across costa and cell. The silver sheen never extends discally down to the innermargin as in *phaeus*.

**Female, Upperside:** Ground colour brownish-black. White discal and postdiscal spots well apart except that the spots in 1b may touch; anterior half of discal bar and postdiscal spots may be orange. Hindwing discal white band extends from costa, where it is widest, then tapering towards inner fold and there represented by a pale mark, the lower half of the band shaded with blue or orange, submarginal marks clear, lilac or bluish with white centres. Upper tail longer and larger than lower. **Underside:** Basal area of forewing greyish, shading to brownish towards the outer border, discal band creamy to ochre. Hindwing marks obscured, discal pale band slightly indicated at costal end. The whole underside with a satiny glaze.

## DESCRIPTION OF MALE

Forewing length 29.5 — 32.3mm; antenna-wing ratio: 0.42.

**Head:** Fronto-clypeal region thickly covered with dark grey hairs; epicranial region covered with black hairs. There is a patch of white scales anterior and posterior to each antennal base. Compound eye is ringed posteriorly with white scales. Labial palps are dorso-laterally black, ventro-laterally pinkish-grey. Antennae are black, proboscis ochre. **Thorax:** Black covered with greenish-black hairs and scales dorsally, pinkish-grey ventrally and laterally. **Legs:** Femur dorsally black with bluish-white spots, otherwise legs pinkish-grey. **Abdomen:** Greenish-black dorsally and laterally, pinkish-grey ventrally. **Wings: Upperside:** Forewing shape falcate. Ground colour velvety black with basal bluish lustre. Two blue or bluish subapical spots; midway between these and the cell are two more blue spots, the upper being larger than the lower which is often faint; at the distal end of the cell is another

small, faint blue spot. Margin bluish or greenish, merging into the ground colour. It is broken by black along the veins; width 2mm, broader at apex. Faint blue submarginal spots may be present. *Hindwing*: Ground colour blue-black with very fine greenish-black hairs basally extending along the upper edge of the anal fold to the tornus. Anal fold dark grey to greyish. Margin in 4 to 6 orange-red bordered with blue or greenish-blue with a very small faint bluish mark in 7. Margin is broken by black along the veins. Two tails on veins 2 and 4. The tail on vein 2 is 3.7 — 4.7mm long, and on vein 4 is 4.0 — 5.6mm. The lower is always broader and slightly longer than the upper. Margin between tails greenish-ochre and extending into the tails. Tornus protruding, margin olive with two submarginal blue spots thinly lined with white proximally. The other submarginal blue spots are smaller, usually centred with white. Faint postdiscal line from tornus to 6.

*Underside*: Forewing ground colour grey-brown with silvery satin sheen extending over entire forewing except for basal, discal and submarginal areas. The black discal striae begin at the costa below the subapex, becoming wider posteriorly until they form a black patch surrounded by light blue scaling in 1b. Two submarginal black patches appear in 1b. Basal, sub-basal median and submedian black lines distinct. *Hindwing*: Ground colour pale coppery-brown with a silver satin sheen extending from base across the costa and cell. Anal fold greyish with slight silvery sheen. Postdiscal line of olive and red lunules better developed towards inner margin. Margin above tails red to orange red, olive or greenish below and extending into the tails. Submarginal line of blue and white spots from tornus to 7 or 8; submarginal area with pinkish sheen.

#### DESCRIPTION OF FEMALE

Forewing length 33.3 — 37.5mm; antenna-wing ratio: 0.36.

*Head*: Fronto-clypeal and epicranial region thickly covered with dark brownish-grey hairs. There is a patch of white scales anterior and posterior to each antennal base. Compound eye is ringed posteriorly with white scales. Labial palpi are dorso-laterally greyish-black, ventro-laterally pinkish-white. Antennae are black, proboscis ochre. *Thorax*: Black covered with hairs and scales, dark greenish-grey dorsally, ventrally and laterally pinkish-grey. *Legs*: Femur dorsally black with bluish-white spots, otherwise legs pinkish-grey. *Abdomen*: Dark grey becoming lighter ventrally.

*Wings*: The following is the description of the holotype as given by van Someren and Jackson in 1957. "*Upperside*: Forewing ground colour black with a strong greenish suffusion basally; a bluish-white spot often present in the cell; a small one (often doubled) just beyond the cell; discal bar white or bluish-white, commencing with a subcostal spot in 5—6, then sub-basal in 3, widening to middle of 1a. A post-discal series of white spots from 2 — 7. Hindwing discal bar strongly bluish, or at least edged distally with blue, extends from costa to inner

fold, but does not cross it except just above anal angle. A submarginal series of lunulate blue or bluish white spots distally edged with black; margin olive to upper tail, then red. *Underside*: Forewing ground colour as in the male, but white marks show through; hindwing discal bar less strongly indicated”.

There is some variation among the females of this species and three forms are easily distinguishable. At the one extreme there is the female corresponding to the holotype, in which the discal bar is white or bluish, while at the other extreme there is a variation in which the discal bar is orange and white, while the third is an intermediate between the two in which the orange markings are reduced to a pale yellow-ochre colour. All three variations were bred from ova laid by a single female collected at Waterpoor in the Transvaal. The two extremes are scarcer than the intermediate.

*Variation 1*: This is the form described as the holotype, with a white or bluish-white discal bar.

*Variation 2*: *Upperside*: Forewing, ground colour black with a strong greenish suffusion basally, distal margin reddish-brown, widest at apex and tapering towards tornus. Discal bar orange in 2—6, white in 1a and 1b, widest in 1a and narrowing anteriorly. Postdiscal series of orange spots from 2—7.

*Hindwing*: discal bar extends from costa to inner margin, white suffused with orange in 1b—4; distally white, suffused with blue in 5—8. *Underside*: Forewing as in holotype, but orange as well as white shows through. Distal margin red-brown as on upperside. Hindwing as in holotype. Tail on vein 4 is 6.2—8.0mm and on vein 2 is 4.9—6.9mm.

*Variation 3*: This variation appears to be an intermediate between the other two. The orange markings on the forewing upperside of Variation 2 are reduced to a pale yellow-ochre colour and the hindwing discal bar has no orange at all. In some specimens the hindwing discal bar can be completely suffused with pale blue scales.

♂ *GENITALIA*: Uncus longer than tegumen, a single rounded lobe with a small apical projection and several hairs; gnathos about the same length as the uncus, expanded distally; valva produced into an apical process, ventral edge folded inwards, ridge turns ventrally below apical process where it runs into a long hook; furca short, broad, distally expanded convex plate, apically compressed, forming a short sharp hook. Ratio of valva to aedeagus, about 0.6; ratio of proximal to distal portions of aedeagus, about 0.88; the aedeagus has a large toothed, ventrally-protruding hook which is of diagnostic value; distal end is compressed. Vinculum narrow.

♀ *HOLOTYPE*: Transvall, Pretoria, 29.IV.1948, C. R. S. van Son, in Transvaal Museum, Pretoria.

♀ *PARATYPE*: Transvaal, Pretoria, 22.IV.1948, C. R. S. van Son, in British Museum (N.H.), London.

### Life History

*Foodplant: Peltophorum africanum* Sond. (Leguminosae).

**EARLY STAGES:** Larvae and ova of this species can be found on both saplings and larger trees. With some experience one can soon differentiate between promising and unlikely vegetation types. On small saplings the larvae tend to hide themselves amongst the vegetation, but on larger trees they prefer odd sprays on the outside of the main mass of vegetation. During the past season Bampton has found several larvae while motoring through the Transvaal, and spotting a likely looking tree on the side of the road. Larvae can be found all the year round, but one of the best months is May.

*Egg:* Oval, 1.2mm in diameter, flattened at the base with a slightly fluted dorsal depression. It is pale green when first laid and develops a brown ring around the depression within 48 hours of being laid if fertile. The egg hatches from 5 to 14 days. The eggs are laid singly on the upper surface of the leaves of the foodplant. At eclosion the larva eats the entire egg shell.

**LARVA: 1st instar:** Total length at eclosion about 4mm. Body ochre, becoming immaculate green once it starts to feed. Headshield is black, oval, diameter 0.7mm; dorsal horns 0.8mm long and curved inwards at the tips; lateral horns 0.4mm long and straight. Length attained by the larva was about 6mm. Duration of instar is normally 1 — 2 weeks.

*2nd instar:* Body immaculate green. Headshield is pale brown, becoming slightly green in the ventral half in some specimens. Diameter of facial disc 1.5mm; dorsal horns 1.6 — 1.9mm long and lateral horns 0.8mm long. Duration of instar normally from 2 — 3 weeks. Length attained by the larva was about 11mm.

*3rd instar:* The body is green, developing yellowish-white somite bars on the sixth and eighth segments. The bar on the sixth segment is well developed while that on the eighth is faint. The headshield diameter is 2mm; it is green with a broad yellow band around the lower margin, ventral side of the lateral horns and laterally on the dorsal horns. There are two laterally situated black patches on either side of the head near the lower angle. The dorsal horns 2 — 2.5mm long and the lateral horns 1 — 1.5mm long; the former are curved inwardly at the tips; the horns are green, occasionally tipped with brown. Length attained by larva is about 15mm. Duration of instar normally from 2 — 3 weeks.

*4th instar:* Develops third somite bar on the tenth segment. All three bars are now well developed. The intersegmental membranes anteriorly are yellowish. The headshield is similar to that of the third instar, diameter is 3mm, dorsal horns 4 mm and lateral horns 2mm. Length attained by larva is about 23mm. Duration of instar is normally 2 — 3 weeks

*5th instar:* Body green, with three well developed somite bars on segments six, eight, and ten. Intersegmental membrane is yellowish between the first six segments and to a lesser